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August 24, 2011

Mr. Daniel P. McInerny, Esq.
Bose McKinney & Evans LLP
2700 First Indiana Plaza
Indianapolis, Indiana 46204

Re: **Geophysical Survey**
West Vermont Street Drinking Water Site
Speedway, Indiana Site ID#B5UJ
MUNDELL Project No. M01046

Dear Mr. McInerny:

This brief technical summary is being provided to you by MUNDELL & ASSOCIATES, INC. (MUNDELL), on behalf of AIMCO Michigan Meadows Holdings, LCC (AMMH), in order to supplement existing subsurface information related to the above-referenced area. MUNDELL collected the information enclosed on April 21, 2011 during its continuing investigation and remedial activities for the Michigan Plaza site on 3801-3823 West Michigan Street in Indianapolis, Indiana.

INTRODUCTION

The survey area for this project consisted of the right-of-way on the north side of Michigan Street, located between North Rybolt Avenue and Tomlinson Drive, just west of Holt Road. (see **Figure 1**). The objective of this investigation was to provide additional information to further support the general mapping of subsurface soil layers in the area, including sand and gravel zones of increased permeability. The approach MUNDELL chose to use was a non-invasive geophysical survey technique to characterize the electrical resistivity of the upper 100 feet of the subsurface using two-dimensional electrical resistivity imaging (2D ERI). A brief description of this technique and the results obtained are presented in the following sections.

GEOPHYSICAL METHODOLOGIES

Two-Dimensional Electrical Resistivity

Electrical resistivity is one of the most widely varying of the physical properties of natural materials. Certain minerals, such as native metals and graphite, conduct electricity via the passage of electrons; however, electronic conduction is generally very rare in the subsurface. Most minerals and rocks are insulators, and electrical current preferentially travels through the water-filled pores in soils and rocks by the passage of the free ions in pore waters *(i.e.*, ionic conduction). It thus follows that the degree of saturation, interconnected porosity, and water chemistry (*i.e*., total dissolved solids) are the major controlling variables of the resistivity of soils and rocks. In general, electrical resistivity directly varies with changes in these parameters. Fine-grained sediments, particularly clay-rich sediments such as glacial till, are excellent conductors of electricity, while coarser-grained sands and gravels are much more resistive. Carbonate rocks (i.e., limestone and dolomite) are very electrically resistive when they are unfractured, but can have significantly lower resistivity values when fractured and/or weathered and solutioned, and shale bedrock is very conductive.

One (1) resistivity profile was collected with a SuperSting R8 Resistivity Imaging System manufactured by *Advanced Geosciences, Inc.*, using a Schlumberger array and an electrode spacing of 3 meters (approximately 10 feet). *Line* 1 was collected by compiling two electrode spreads into one continuous profile of 89 electrodes. The location of profile *Line 1* is shown on **Figure 1**. The relative location of other borings and monitoring wells previously completed by others is also shown on the figure. Once the data were collected, they were downloaded to a computer and subsequently inverse-modeled using the software *Res2DInv v 3.58* to obtain an “actual”, true resistivity cross-section of the subsurface. This is obtained through the process of generating a model resistivity cross-section, calculating the apparent resistivity pseudo-section that would result from such a model, and comparing the calculated pseudo-section to the one collected in the field. The model is then altered through a number of iterations until the two pseudo-sections closely match each other with a minimal error. At this point the model is considered to be a reasonable estimation of the true resistivities of the actual subsurface materials.

It should be noted that the resistivity cross sections presented in this report are 2-dimensional representations of the general distribution of electrical resistivity in the 3-dimensional subsurface. There is no unique direct conversion from resistivity values to lithology. However, based on site knowledge, geometric shapes and relationships of various anomalies, and the observed ranges of resistivity values, reasonable geologic interpretations can be made. Very often an experienced interpreter can readily recognize geologic features on these cross-sections.

RESULTS

One (1) resistivity profile was collected for this limited assessment, and it is presented in detail as **Figure 2**. This resistivity profile shows a slightly variable shallower layer of mostly sand and gravel deposits within the upper 20 ft, underlain by various zones of moderate to high resistivity sand and gravel (70 to 360 ohm-meters, *i.e.* green to purple in color), interbedded with low to moderate resistivity silt and clay (0 to 70 ohm-m, *i.e.*

dark blue to light blue in color). While these zones appear to be mostly continuous within a localized area, they are not, based on the boring logs advanced in the general vicinity of the profile line. These logs indicate numerous interbedded layers of sand and gravel with silt and clay. Thus, the resistivity profile, as indicated, should be interpreted as indicating portions of the alignment which are consistent with increased zones of sand and gravel or increased zones of silt and clay. Based on this, two significant areas (from 0 to 375 ft and from 625 to 775 ft along the profile line measured from the west end) are shown to potentially contain greater horizontal and vertical distributions of sand and gravel. Conversely, an area with a significant increased silt and clay contain is present within the central portion of the profile line (400 to 625 from the west end). This information, considered in conjunction with any available boring log information for the wells shown on **Figure 2**, may provide useful characterization data to aid in locating future sampling points and monitoring wells.

LIMITATIONS

The results and interpretations of the geophysical survey performed are considered generally reliable and were conducted in a manner consistent with practitioners in the field of geophysical engineering. The data presented herein are considered to be of sufficient accuracy and precision to provide positional data for further investigation activities. However, the precise location and distribution of subsurface materials can only be confirmed through direct observation using test borings to confirm subsurface geologic materials. The Site features presented on the base maps are for informational purposes only and no representation is made as to the accuracy or completeness of this information.

CLOSING

We appreciate the opportunity to provide geophysical services to you on this project. If you should have any questions regarding the enclosed information, please do not hesitate to contact us at (317) 630-9060, or ghebert@MundellAssociates.com, jmundell@MundellAssociates.com, or swebb@MundellAssociates.com.

Sincerely,

MUNDELL & ASSOCIATES, INC.

Gabriel Hebert
Project Geophysicist

Sarah E. Webb, L.P.G.
Project Hydrogeologist

John A. Mundell, P.E., L.P.G.
President/Senior Environmental Consultant

/jam

cc: Mr. Peter Cappel, AMMH

Attachments:

Figure 1. Resistivity Line Location
Figure 2. Resistivity Line 1

FIGURES

Mundell Consulting Professionals for the Earth and the Environment

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REV.	DATE	DESCRIPTION	BY	APPR.

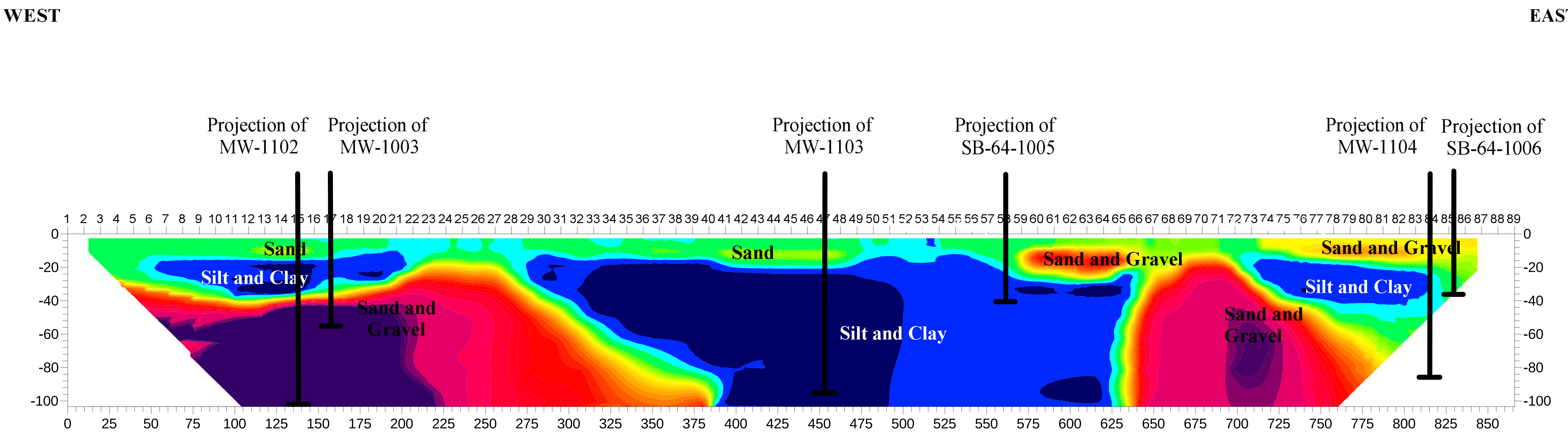
PROJECT NO.: M10022	FILE NO.: M10022.srf
DRAWING:	PLOT SIZE: 11"x17"
DRAFTED BY: GJH	DATE: 6/24/10
CHECKED BY: GJH	DATE: 6/28/10
APPROVED BY: JAM	DATE: 6/30/10

Resistivity Line Location

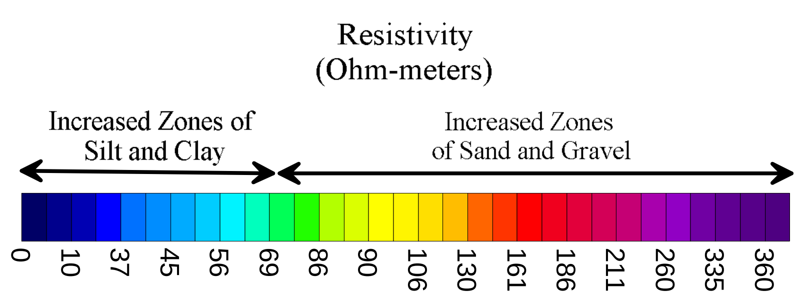
Michigan Street
Indianapolis, Indiana
MUNDELL Project No. M01046

FIGURE

1



PROCESSING STATISTICS
Number of Iterations: 5
RMS Error: 16.1%
Total Number of Data: 853
Maximum Misfit: 85%



Resistivity Profile Line 1

Michigan Street
Indianapolis, Indiana
MUNDELL Projectl No. M01046

FIGURE
2

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